



## Spring 2019 Course Catalog

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Learn how to setup, configure, and program the **Allen-Bradley ControlLogix Family** of Programmable Automation Controllers in **PAC Basics**

## Standard Course Lessons:

(Included with Standard and Extended courses)

### Hardware

- Design of System
- Overview of System Components
- ControlLogix Controller Anatomy
- Manuals and Documentation

### Software

- Packages and Versions
- RSLogix 5000 vs Studio 5000
- Update: Windows Patch Issues
- RSLogix and Studio 5000 First Look
- Controller Properties
- Tasks, Programs, Routines, Tags

### Communications

- Ethernet and ControlNet Addressing
- How to setup RSLinx Classic Drivers
- Flashing Controller and Module Firmware

### Programming

- Adding Local, Ethernet, and ControlNet I/O
- Testing and Troubleshooting I/O Config
- Controller and Program Tags
- How Ladder Logic Diagrams (LD) differ in ControlLogix compared to A-B PLCs & SLCs
- Creating a Motor Control Ladder Routine
- Using Photo Eyes for Part Sensing (LD)
- How Function Block (FBD) Routines work
- Create a Machine Runtime FBD Routine
- How User Defined Data Types (UDT) work
- Create and use UDTs in Part Counting

## Advanced Course Lessons:

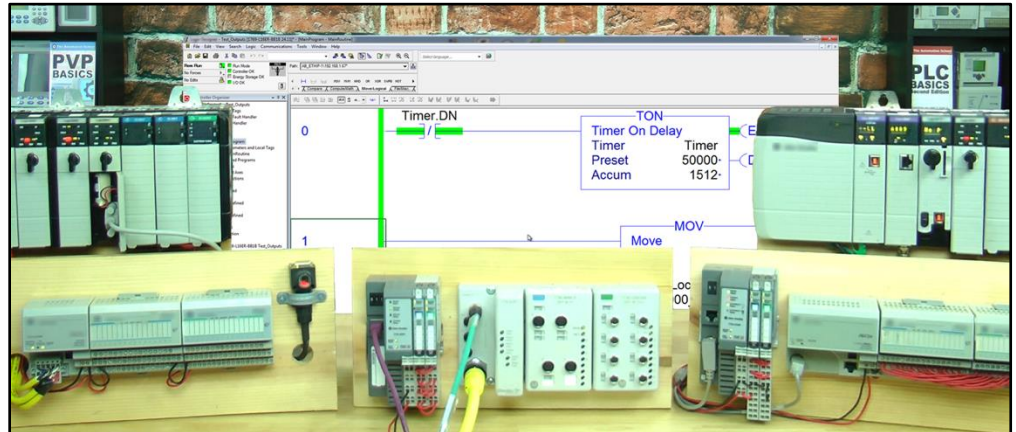
(Included with Extended course only)

### Advanced Programming

- How Structured Text (ST) Routines work
- Calculate Scrap Ratios using ST Routine
- Sequential Function Chart (SFC) Routines
- Part Count, Copy, Reset Routine using SFC
- Changing a Project's Version
- Duplicating and Re-using Code
- How Add-on Instructions (AOI) work
- Create, Download, and Use AOIs
- Using PlantPAx Objects AOIs
- Using Produced and Consumed Tags
- Messaging ControlLogix Controllers
- Messaging Controllers over DF1
- Messaging Controllers over DH+
- Messaging Controllers over Ethernet
- Bonus: Legacy PLC Comm Setup

### VFD Integration (Digital / DVD Forum)

- PowerFlex VFD Integration
- Using LD and VFDs for Motor Control
- Using FBD for VFD Motor Control
- Controlling VFDs over Ethernet



**PAC Basics is designed for those students who are already familiar with PLCs, and would like to learn how to setup, program, and troubleshoot the ControlLogix family of Programmable Automation Controllers (PACs) using RSLogix 5000 and Studio 5000.**

### What students will learn:

- Understanding the overall design of ControlLogix system and components
- How to configure a system's Controllers, I/O, and Communications Modules
- How to setup Ethernet, Serial DF1, and USB drivers in RSLinx Classic
- The difference between RSLogix 5000 and Studio 5000
- How to setup, configure, and edit RSLogix and Studio 5000 projects
- How to add, edit, and test Local, Ethernet, and ControlNet I/O
- Understanding Controller and Program tags
- How to create and edit Tags and Aliases
- How to setup, configure and edit Tasks, Programs, and Routines
- Understanding how Ladder Logic differs in ControlLogix when compared with other PLCs
- How to create, test, run, and troubleshoot Ladder Diagram Routines
- Understanding Function Block Diagram Routines, and how they Execute
- How to create, test, run, and troubleshoot Function Block Diagram Routines
- How to create and use User Defined Data Types
- And many additional advanced topics in the **Extended Edition**

### What students need to complete hands-on exercises:

- Windows 7, 8, or 10 PC with Ethernet or USB
- A CompactLogix or ControlLogix PAC with a communications port compatible with the student's PC (Ethernet, USB, etc.)
- A version of RSLogix 5000 or Studio 5000 that is compatible with the student's PC, and with the student's CompactLogix or ControlLogix PAC

**Course Editions** (Note: Online courses include instructor support, completion certificate, and lifetime access)

- **PAC Basics Standard Online Course** (upgradable to extended online course) **\$119.99**
- **PAC Basics Extended Online Course** (includes new 2019 lessons coming this fall) **\$349.99**
- **PAC Basics Extended DVD Course** (includes new 2019 discs shipping this winter) **\$349.99**

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Learn to create, edit, and deploy **FactoryTalk View Site Edition** applications using **FactoryTalk View Studio** in **ViewSE Basics**

## Course Lessons:

### Software Overview

- What is ViewSE?
- Navigating View Studio
- Sample Applications
- Restoring Applications

### Creating and Editing Applications

- Creating a Local Application
- Creating Graphic Displays
- Display Settings, Objects
- Color and Fill Animation
- Importing and Using Libraries
- Memory Tags, Numeric Inputs, Sliders
- Duplicate, Export, and Import Tags
- Using Tag Substitution
- On-Top Popup Displays
- Using Parameters and Placeholders
- Creating and using Derived Tags and Expressions

### Communications

- Configuring RSLinx Enterprise, Classic
- Direct Reference and Device Tags
- Offline Tag Browsing, Tag Importing

### Graphic Displays

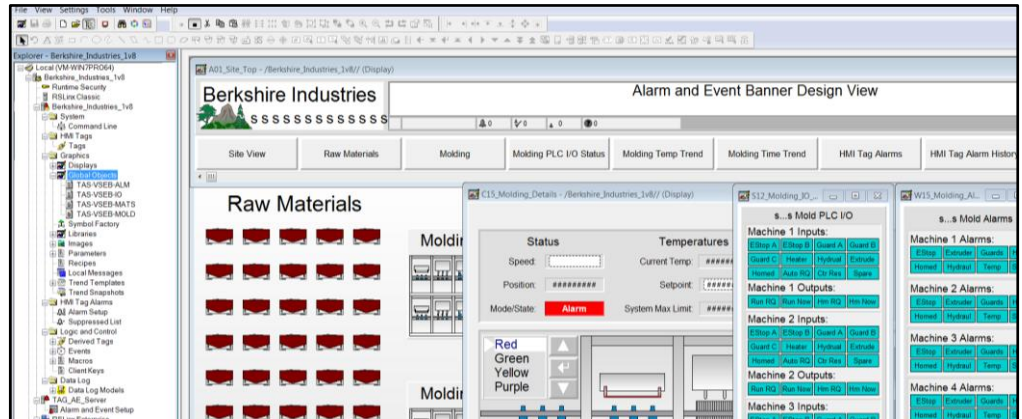
- Display Design and Reuse
- Create and Use Parameter Files
- Using the Command Line and Macros
- Additional Graphical Objects
- Additional Animations
- Building Buttons, Lights, Switches
- Using Global Objects
- Creating Global Objects

### Advanced Topics

- Live and Historical Data Trends
- File Set and ODBC Datalogs
- Using Trend Templates
- HMI Tag Alarm Setup, Logs, Objects
- A&E Tag Alarm Setup, Logs, Objects
- A&E Instruction Alarms
- Docked Displays, Find and Replace
- Securing your Application
- Configuring and Publishing ViewPoint

### Deploying Applications

- Complete Backup including FTAE, SQL
- OWS Setup and Configuration
- Deploying Application to OWS



**ViewSE Basics** is designed for those students who want to learn how to create, edit, and deploy **FactoryTalk View Site Edition Local Station** applications using **FactoryTalk View Studio Enterprise**.

### What students will learn:

- What FactoryTalk ViewSE is, and how to find its documentation and downloads
- Understanding how ViewSE works, and how to create ViewSE Applications
- Graphic Displays and settings, Object Properties, and In-place Editing
- Testing Displays, Creating Client Files, and Editing running applications
- Using Drawing objects, Library Objects, and the Symbol Factory
- HMI System Tags, Numeric Displays, Color and Fill Animations
- Creating, editing, and duplicating Tags, Importing Displays, Using Numeric Inputs
- Slider Animation, Tag Substitution, Tag Placeholders and Parameters
- Using On Top Displays, Expressions, Derived Tags, and Events
- Setting up RSLinx Enterprise, RSLinx Classic, and Using Direct References and Device Tags
- Offline Browsing and Tag Importing, Creating and Using Parameter Files and Placeholders
- Command Line use, Using and Creating Macros, Using and Creating Global Objects
- Datalogging and Trending, HMI Tag Alarms and Alarm and Event Alarming
- User, Group, and Application Security, Backing up Applications, Using FT ViewPoint
- Setting up an Operator Workstation, Restoring and Running and Application

### Who should take this course:

- Anyone who would like to learn how to create, edit, and deploy ViewSE projects.

### What students need to complete optional hands-on exercises:

- A working copy of FactoryTalk View Studio Enterprise Edition (lesson included on how to request a free demo copy from Rockwell)
- A compatible Windows PC to install and run "View Studio Enterprise" on
- An A-B PLC or PAC (lesson included on how to download a free PLC emulator)

**Course Editions** (Note: Online courses include instructor support, completion certificate, and lifetime access)

- **ViewSE Basics Online Course** (includes all future updates) **\$199.99**

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Learn how to setup, configure, and program the **Allen-Bradley MicroLogix Programmable Logic Controllers** using RSLogix 500 or RSLogix Micro in **PLC Basics**

## Standard Course Lessons:

(Included with Standard and Extended courses)

### Hardware

- What a PLC is
- Where PLCs are used
- Anatomy of a PLC
- Styles and Types
- Common Inputs and Outputs
- PLCs used in this course
- MicroLogix Hardware Tour
- Programming Cables
- Manuals and Documentation

### Numbers and Data

- Numeral Systems & Types of Numbers
- Digital Information & Data Types

### Ladder Logic and RSLogix Software

- What Ladder Logic is & How it works
- PLC Scan Detailed
- Download and Install Software
- Using RSLogix Micro
- Browsing Data and Program Memory

### Communications

- RSLinx Emulate Setup
- RSLinx Serial Setup
- RSLinx Ethernet Setup

### Basic Programming

- Basic Bit Instructions
- Motor Control

## Advanced Course Lessons:

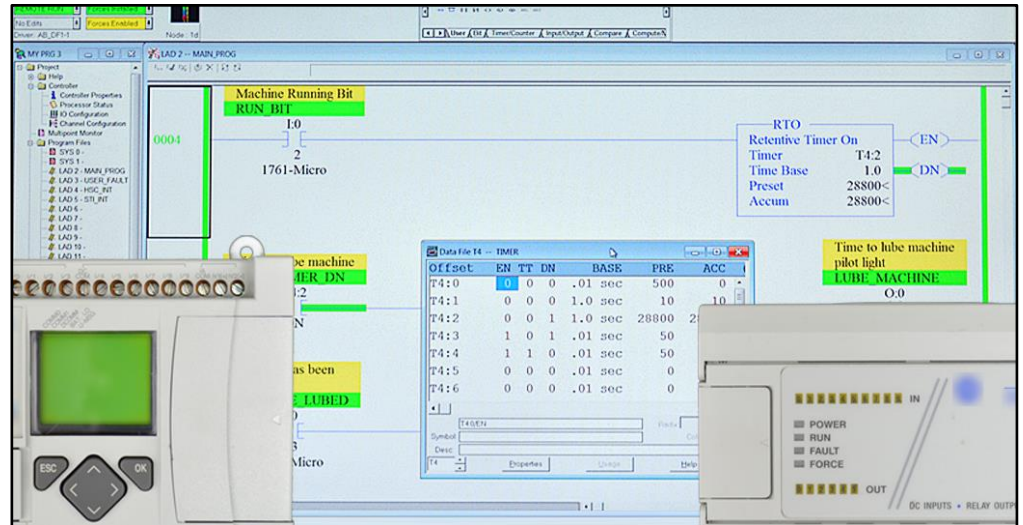
(Included with Extended course only)

### Photo Eyes, Timers, and Counters

- Bin Full Detection
- Sense Jam, No parts
- Elapsed Run Time
- Delay Time
- Part Counting
- Copy Part Counts
- Conditional Resets
- Extra credit lessons

### Math and Compare

- Using ADD and SUB instructions
- Using MUL and DIV instructions
- Using GRT and LES instructions



**PLC Basics, Second Edition** is designed for those students who have basic electrical knowledge, and would like to learn how to setup, program, and troubleshoot PLCs - perfect for new PLC users! The specific PLCs covered in this course (pictured above) include the Allen-Bradley MicroLogix 1100 and 1000, both of which can be programmed using the free RSLogix Micro Starter Lite software.

### What students will learn:

- What a PLC is
- Styles and Types of PLCs
- Numbering Systems and Data Types
- What Ladder Logic is and how it works
- How to setup Serial and Ethernet Communications
- Creating, Testing, and Troubleshooting MicroLogix Programs in RSLogix
- How to integrate Push Buttons and Pilots Lights with PLC Logic
- How to use PLCs in a Motor Control circuit
- And much more in the Extended Edition

### Who should take this course:

- Anyone with basic electrical knowledge who would like to learn how to use, program, and troubleshoot Programmable Logic Controllers (PLCs.)

### What students need to complete hands-on exercises:

- Windows 7, 8, or 10 PC with Ethernet or USB port
- An internet connection to download the free programming software
- A MicroLogix 1000, a "USB to Mini-Din" programming cable, and a USB port on their PC.
- Or a MicroLogix 1100, a standard Ethernet cable, and Ethernet Port on student's PC.

### Course Editions (Note: Online courses include instructor support, completion certificate, and lifetime access)

- **PLC Basics Second Ed. Standard Online Course** (upgradable to extended online course) **\$59.99**
- **PLC Basics Second Ed. Extended Online Course** (includes new 2019 lessons coming this fall) **\$149.99**
- **PLC Basics Second Ed. Extended DVD Course** (includes new 2019 discs shipping this winter) **\$149.99**

\*Note: We also offer our original PLC "Core" Basics First Edition Online Course for \$29.99

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Learn how to setup, configure, and program the Allen-Bradley PanelView Plus using View Studio Machine Edition in PVP Basics

## Course Lessons:

### Hardware

- PanelView Plus 700-1500
- PanelView Plus 400, 600, Compact
- PanelView Plus Version Support
- PanelView Plus 6 Models
- PanelView Plus 7 Models
- Configuration Menu Settings

### Software

- Update: Windows Patch Issues
- Introduction to View Studio ME
- Project System Settings
- HMI Tags
- Graphic Displays

### Creating and Editing Applications

- Memory Tags
- Default Graphic Displays
- Panel, Text, and Image Objects
- Numeric and String Displays
- Library and Symbol Factory
- Navigation and Testing Applications
- Numeric and String Inputs
- Fill and other Animations
- Arrange, Align, Substitute

### Communications

- RSLinx Enterprise
- HMI Device Tags
- Direct Referencing Logix Tags

### Graphic Displays

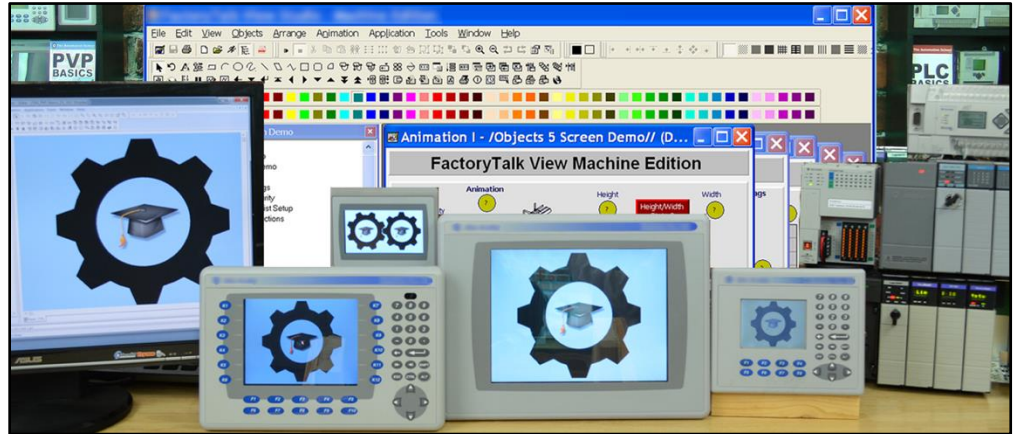
- Display Design
- Find and Replace
- Sliders

### Advanced Topics

- Alarms and Alarming
- Using Images on Buttons

### Running and Storing Applications

- How to create .MER runtime files
- How to transfer .MER files via RSLinx and the Transfer Wizard
- How to transfer .MERS via Memory Cards
- Correctly backing up an application



**PVP Basics is designed for those students who have basic PLC knowledge and would like to learn how to setup, program, and troubleshoot the Allen-Bradley PanelView Plus using View Studio Machine Edition.**

## What students will learn:

- How to open, edit, and create applications
- How to correctly setup project settings, and what to consider before doing so
- How to setup RSLinx Enterprise Serial and Ethernet communications
- Setup RSLinx Enterprise for use with ControlLogix, CompactLogix, SLC-500, and MicroLogix
- How to create, edit, and use all the different types of HMI Tags
- How to import Tags from RSLogix projects and files
- How to import and export the Tag DB to Excel to speed edits
- How to directly reference PLC Tags online and off
- How to create, edit, and test Graphics, Objects, Symbols, and Libraries
- How to test Displays, as well as test an entire Application on your PC
- How to setup, add, display, and edit Alarms
- How to create and download .MER files over Networks and using Memory Cards
- How to correctly back up and share applications

## Who should take this course:

- Anyone with basic electrical knowledge who would like to learn how to use, program, and troubleshoot the Allen-Bradley PanelView Plus HMI using View Studio Machine Edition.

## What students need to complete hands-on exercises:

- Windows 7, 8, or 10 PC with a compatible Ethernet or Serial port.
- View Studio Machine Edition (lesson about how to get a free demo version is included)
- An A-B PLC or PAC compatible with Student's PC for RSLinx communication lessons
- An Allen-Bradley PanelView Plus for Configuration and Download lessons

## Course Editions (Note: Online courses include instructor support, completion certificate, and lifetime access)

- **PVP "Core" Basics First Edition Online Course** (upgradable to Plus online course) **\$59.99**
- **PVP Basics "Plus" Online Course** (includes updated 2019 course coming this summer) **\$149.99**
- **PVP Basics "Plus" DVD Course** (includes updated 2019 course discs shipping this fall) **\$149.99**

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## Learn how to setup, configure, and program Allen-Bradley Micro800 Nano Programmable Controllers using CCW in Nano Basics

### Standard Course Lessons:

(Included with Standard and Extended courses)

#### Hardware

- Micro800 Controllers
- Selecting Components
- Hardware Unboxings
- Local Rockwell Representative

#### Software

- Downloading CCW Software
- Installing CCW on Windows 7, 10
- Update: Windows Patch Issues

#### Communications

- RSLinx Classic Configuration
- Setting up USB Comms
- Setting up Ethernet Comms
- Flashing Firmware

#### Programming

- Motor Control using Ladder Diagram routines.
- Part Sensing (LD) with Photo Eyes
- Machine Runtime using FBD
- Part Counting using FBD
- Performing Calculations using ST
- Exporting and Importing Programs

### Advanced Course Lessons:

(Included with Extended course only)

#### Analog and Expansion I/O

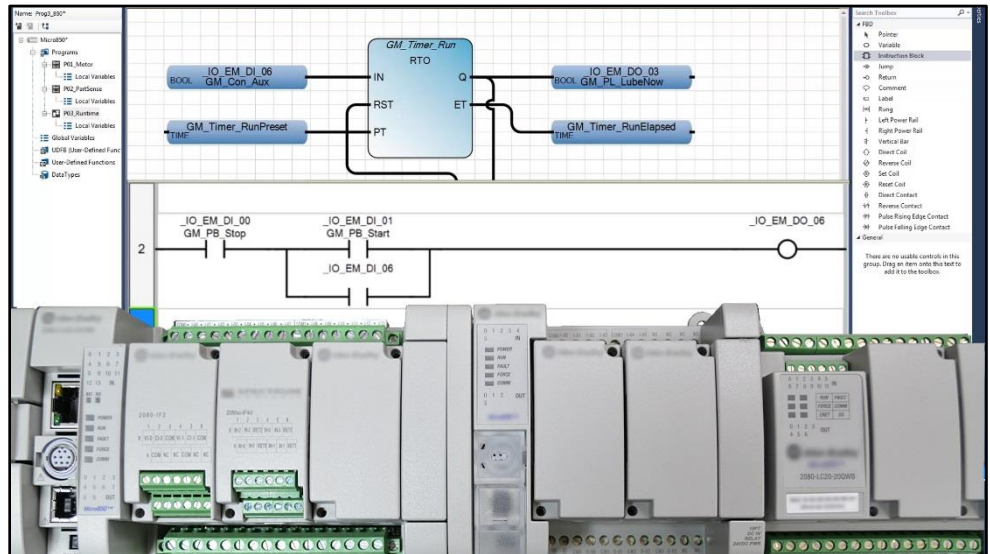
- Using and Scaling Analog Inputs
- Using and Scaling Analog Outputs
- Using Universal Analog Inputs
- Using Plugin and Expansion I/O
- Using Serial Plug-In with Modbus

#### Variable Frequency Drives

- Controlling VFDs over Modbus
- Setting up VFDs on Ethernet
- Controlling VFDs over Ethernet

#### Human Machine Interfaces

- Creating a PanelView 800 Motor Control Project



Nano Basics is designed for those students who have basic PLC knowledge and would like to learn how to setup, program, and troubleshoot the Allen-Bradley Micro800 line of Nano Programmable Controllers using Connected Components Workbench.

### What students will learn:

- Understand the design of the Micro800 Family of Nano PLCs
- How to choose Micro800 components and configure a system
- How to get the free programming software and how it works
- How to setup Micro800 and RSLinx Ethernet and USB communications
- How to Flash Controller Firmware over Ethernet and USB
- How to create and test a Motor Control routine in Ladder Logic
- How to create and test a Part Sensing routine using Photo Eyes
- How to create and test a Machine Runtime routine in Function Block
- How to create and test a Part Counting routine in Function Block
- How to create and test a Mathematical Calculation routine in Structured Text
- How to Export and Import Micro800 Programs using CCW
- And much more in the Extended Edition!

### What students need to complete hands-on exercises:

- Windows 7, 8, or 10 PC with an Ethernet and/or USB Port
- An internet connection to download the free programming software
- An Allen-Bradley Micro800 with USB or Ethernet communications ports

**Course Editions** (Note: Online courses include instructor support, completion certificate, and lifetime access)

- **Nano Basics Standard Online Course** (upgradable to extended online course) **\$59.99**
- **Nano Basics Extended Online Course** (includes new 2019 lessons coming this fall) **\$149.99**

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Save with Early Access and learn how to setup, configure, and program the **CompactLogix** Small Programmable Automation Controller in [Compact Basics](#)

### Planned Course Lessons:

- Hardware Overview and Design
- L20, L30, L31, L32, L35, L23
- L4, 5370, 5380
- Controller Anatomy
- Selection, Documentation
- Selecting Components, IAB
- RSLogix 5000 and Studio 5000
- Software First Look, Application s
- Controller Properties, Tasks, Programs, Routines, Tags
- Addressing Ethernet Devices
- Setting up Comm Drivers
- Flashing Firmware
- Built-in and Local 1769 I/O Configuration
- Local 5069 I/O Configuration
- Remote Ethernet Point I/O, Flex I/O
- Ladder Logic Programming
- Function Block Diagram Programming
- Creating and Using User Defined Data Types

Our **CompactLogix Small PAC Basics Course (Compact Basics)** is designed for those students who are already familiar with PLCs, and would like to learn how to setup, program, and troubleshoot the **CompactLogix** using **RSLogix 5000** and **Studio 5000**

### What students will learn:

- Understanding the design and different models of CompactLogix Controllers
- The difference between RSLogix 5000 and Studio 5000
- How to size a system, choose components, and configure Controllers, I/O, and Comms
- How to setup Ethernet, Serial DF1, and USB drivers in RSLinx Classic
- How to setup, configure, and edit RSLogix/Studio 5000 projects
- How to add, edit, and test Local I/O, and Distributed Ethernet I/O
- Understanding Controller and Program tags, and how to create and edit Tags and Aliases
- How to setup, configure and edit Tasks, Programs, and Routines
- Understanding how Ladder Logic differs in CompactLogix from other PLCs
- How to create, test, run, and troubleshoot Ladder Diagram Routines.
- Understanding Function Block Diagram Routines, and how they Execute
- How to create, test, run, and troubleshoot Function Block Diagram Routines
- How to create and use User Defined Data Types

**Course Editions** (Note: Online courses include instructor support, completion certificate, and lifetime access)

- **Compact Basics Online Course "Early Access"** (includes full course upon release!) **\$59.99**

 [TheAutomationSchool.com/CompactBasics](https://TheAutomationSchool.com/CompactBasics)

Learn to backup PowerFlex Drives using **Connected Components Workbench (CCW)** over Ethernet, USB, and with the 1203-USB cable in [CCW VFD Quickstart](#)

### Course Lessons:

- Lesson 1: CCW VFD Intro
- Lesson 2.1: Downloading CCW
- Lesson 2.2: Installing CCW
- Update: Win 7/8.1/10 Patch Issues
- Lesson 3.1: Setup Ethernet
- Lesson 3.2: Setup USB
- Lesson 3.3: Setup 1203-USB
- Lesson 4.1: Using Ethernet
- Lesson 4.2: Using USB
- Lesson 4.3: Using 1203-USB
- Lesson 5: Final Lesson
- Update: How To Find Your Local Rep
- Bonus 1: EIP from Keypad
- Bonus 2: EIP via BOOTP

### What students will learn:

- Where to download a free copy of CCW
- How to install CCW, including how to work around the .NET issue
- How to download and install drivers and firmware for the 1203-USB cable
- How to setup RSLinx Classic's Ethernet IP and Ethernet Devices Drivers
- How to setup RSLinx Classic's Driver for the 1203-USB cable
- How to download PowerFlex manuals and update files
- How to connect to the PowerFlex 520 series using USB on Windows 10 and 7
- How to use the PowerFlex USB utility to up & download parameters from 520 series VFDs
- How to import, edit, and export PowerFlex USB utility parameter files in CCW
- How to use CCW to upload and download drive parameters over Ethernet
- How to use CCW and the 1203-USB to upload and download drive parameters over DSI
- Bonus: How to set PowerFlex 525's Ethernet Address using its Keypad and BOOTP

**Course Editions** (Note: Online courses include instructor support, completion certificate, and lifetime access)

- **Using CCW with VFDs Quickstart Online Course** **\$24.99**

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# The Automation School's Group Enrollment Program

In 2018, The Automation School began offering a group enrollment to our business customers who needed to enroll multiple employees in one or more of our courses.

Employers who utilize group enrollment gain access to several benefits, including group discounts based on the number of students being enrolled.

Our group enrollment program also provides employers with the ability to monitor student progress using a "group progress webpage," accessible by designated "group leaders."

This webpage not only allows the tracking of student progress, but also provides individual quiz scores and overall completion status.

Access to this level of detail has been especially helpful to employers who incentivize their employees to successfully complete the courses they're enrolled in.

And just like with standard enrollees, students enrolled through the group enrollment process have access to their courses *for as long as they are employed by the company who enrolled them*, as none of our courses come with any artificial deadlines or expiration dates.

So, if you're considering enrolling three or more employees in courses at The Automation School, I invite you to reach out to us for a free group enrollment quote.

Sincerely,

Shawn Tierney,  
Instructor and Founder, The Automation School

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## Common "Group Enrollment" Questions

***"What do I need to provide you with in order to enroll a group of employees in online courses at The Automation School?"***

First, in order for us to provide you with a group enrollment quote, we'll need to know how many students you want to enroll (minimum of three,) and which courses you wish to enroll them in. This information can be submitted to us using our Group Enrollment Inquiry Form [HERE](#).

Then when you place your group enrollment order, you'll need to provide us with the name of each student as well as their company email address. If you wish to make use of the student tracking webpage, we'll also need at least one group manager's name and email address as well.

***"After enrolling a group of employees, if one of them leaves my department or our company can I pass that seat onto to a replacement?"***

Yes! As long as the original enrollee has not completed more than 25% of the course, we can pass the former enrollee's seat on to a new employee *totally free of charge!*

***"How can I find out more about enrolling a group of my employees in online courses at The Automation School?"***

To get in contact with us about group enrollment, just fill out our short Group Enrollment Inquiry form [HERE](#), and we'll typically get in touch with you within one business day!